WHAT IS CLAIMED IS:

1. An antiviral oligonucleotide formulation comprising at least one antiviral oligonucleotide, wherein the antiviral activity of said oligonucleotide occurs principally by a non-sequence complementary mode of action.

2. An antiviral oligonucleotide formulation, comprising at least one antiviral randomer oligonucleotide, wherein the antiviral activity of said formulation occurs principally by a non-sequence complementary mode of action.

3. An oligonucleotide formulation having antiviral activity against a target virus, comprising at least one antiviral oligonucleotide, wherein said oligonucleotide is at least 29 nucleotides in length and the sequence of said oligonucleotide is not complementary to any portion of the genomic sequence of said target virus.

4. An oligonucleotide formulation having antiviral activity against a target virus, comprising at least one antiviral oligonucleotide, wherein said oligonucleotide is at least 6 nucleotides in length and the sequence of said oligonucleotide is not complementary to a mRNA of said target virus and does not consist essentially of polyA, polyC, polyG, polyT, Gquartet, or a TG-rich sequence.

5. The oligonucleotide formulation of any of claims 1 to 4, wherein said formulation has an IC_{50} for a target virus of 0.05 μM or less.

6. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide targets a DNA virus.

7. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide targets a RNA virus.

8. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide is at least 29 nucleotides in length.

9. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide is at least 40 nucleotides in length.

10. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide comprises at least one modification to its chemical structure.

11. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide is a concatemer consisting of two or more oligonucleotide sequences joined by a linker.

12. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide is linked or conjugated at one or more nucleotide residues, to a molecule modifying the characteristics of the oligonucleotide to obtain one or more characteristics selected from the group consisting of higher stability, lower serum interaction, higher cellular uptake, higher viral protein interaction, an improved ability to be formulated for delivery, a detectable signal, higher antiviral activity, better pharmacokinetic properties, specific tissue distribution, lower toxicity.

13. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide is double stranded.

14. The oligonucleotide formulation of any of claims 1 to 4, wherein said formulation further comprises a delivery system.

15. The oligonucleotide formulation of any of claims 1 to 4, wherein said formulation further comprises a liposomal formulation.

16. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide comprises at least one Gquartet motif portion.

17. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide comprises at least one CpG motif portion.

18. The oligonucleotide formulation of any of claims 1 to 4, wherein said oligonucleotide binds to one or more viral components.

19. The oligonucleotide formulation of any of claims 1 to 4, wherein at least a portion of the sequence of said oligonucleotide is derived from a viral genome.

20. The oligonucleotide formulation of any of claims 1 and 4, comprising a mixture of at least two different antiviral oligonucleotides.

21. An antiviral pharmaceutical composition comprising

a therapeutically effective amount of at least one pharmacologically acceptable, antiviral oligonucleotide according to any of claims 1 to 4, wherein the antiviral activity of said oligonucleotide occurs principally by a non-sequence complementary mode of action; and

a pharmaceutically acceptable carrier.

22. The antiviral pharmaceutical composition of claim 21, adapted for delivery by a mode selected from the group consisting of intraocular injection, oral ingestion, enteral application, inhalation, topical application, subcutaneous injection, intramuscular injection, intraperitoneal injection, intrathecal injection, intratrachael injection, and intravenous injection.

23. The antiviral pharmaceutical composition of claim 21, wherein said composition further comprises a delivery system.

24. The antiviral pharmaceutical composition of claim 21, wherein said composition further comprises a liposomal formulation.

25. A kit comprising at least one antiviral oligonucleotide or antiviral oligonucleotide formulation according to any of claims 1 to 4 in a labeled package, wherein the antiviral activity of said oligonucleotide occurs principally by a non-sequence complementary mode of action and the label on said package indicates that said antiviral oligonucleotide can be used against at least one virus.

26. The kit of claim 25, wherein said kit is approved by a regulatory agency for use in humans.

27. A method for selecting an antiviral oligonucleotide for use as an antiviral agent, comprising

synthesizing a plurality of different random oligonucleotides;

testing said oligonucleotides for activity in inhibiting the ability of a virus to produce infectious virions; and

selecting a said oligonucleotide having a pharmaceutically acceptable level of activity for use as an antiviral agent.

28. A method for the prophylaxis or treatment of a viral infection in a subject, comprising

administering to a subject in need of such treatment a therapeutically effective amount of at least one pharmacologically acceptable oligonucleotide according to any of claims 1 to 4.

29. The method of claim 28, wherein said subject is a human.

30. A method for the prophylactic treatment of cancer caused by oncoviruses in a human or a non-human animal, comprising

administering to a human or non-human animal in need of such treatment, a pharmacologically acceptable, therapeutically effective amount of at least one oligonucleotide according to any of claims 1 to 4.

31. The method of claim 30, wherein said oligonucleotide is administered to a human.

32. A method of screening to identify a compound that alters binding of an oligonucleotide to at least one viral component, said method comprising

in separate reactions, contacting said oligonucleotide with said viral component in the presence and absence of a compound to be screened; and

determining whether a difference occurs in binding of said oligonucleotide to said viral component in the presence of said compound compared to in the absence of said compound, the presence of said difference being indicative of said compound altering the binding of said oligonucleotide to said viral component.

33. A novel antiviral compound identified by the method of claim 32.

34. A method for purifying oligonucleotides binding to at least one viral component from a pool of oligonucleotides comprising:

contacting said pool with at least one viral component;

displacing bound oligonucleotides of said pool from said viral component; and collecting displaced oligonucleotides.

35. The method of claim 34, further comprising sequencing, and testing antiviral activity of collected displaced oligonucleotides.

36. A method for enriching oligonucleotides from a pool of oligonucleotides binding to at least one viral component, comprising:

contacting said pool with at least one viral component ; and

amplifying oligonucleotides bound to said viral component to provide an enriched oligonucleotide pool.

37. The method of claim 36, wherein said contacting and amplifying are performed at least one additional time using said enriched oligonucleotide pool as the pool of oligonucleotides.

38. The method of claim 36, further comprising sequencing and testing antiviral activity of oligonucleotides in said enriched oligonucleotide pool.

39. An antiviral oligonucleotide preparation comprising one or more oligonucleotides identified using a method of any of claim 34 or 36, wherein said oligonucleotides in said oligonucleotide preparation exhibit higher mean binding affinity with at least one viral component than the mean binding affinity of oligonucleotides in the initial oligonucleotide pool.

40. The antiviral oligonucleotide preparation of claim 39, wherein the mean binding affinity of said oligonucleotides is at least two-fold greater than the mean binding affinity of oligonucleotides in the initial oligonucleotide pool.